

REMARKS

Claims 48-51, 53-56, 61-62, and 66-69 remain in the application. Claims 1-47, 57-60 and 63-65 were previously cancelled without prejudice to further prosecution. Claim 52 is hereby cancelled without prejudice. Claims 48 and 53 are hereby amended. No new matter is being added.

35 USC 103 (a)

The pending claims stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al., in view of Larson et al., and in further view of Ose et al. Applicants respectfully traverse this rejection.

As indicated by the Examiner on page 9 of the latest office action, Nishimura et al. in view of Larson et al. “does not disclose the use of filtering to either (a) select reflected electrons and reject photoelectrons, as recited in claim 52; (b) select reflected electrons and reject secondary electrons, as recited in claim 66; or (c) select secondary electrons and reject reflected electrons, as recited in claim 61.” As further indicated by the Examiner on page 11 of the latest office action, Nishimura et al. in view of Larson et al. “also does not disclose the use of angular filtering as recited in claims 56 and 67-69.

Ose et al. relates to the preventing the deterioration of resolution due to increase in off-axis aberration resulting from the deviation of a primary electron beam from the optical axis of a scanning electron microscope. As such, Ose et al. discloses a scanning electron microscope with an image shifting deflector system including two deflectors disposed respectively at upper and lower stages. (See Ose et al., Abstract.)

Claim 48 and dependent claims thereof

In regards to claim 48, independent claim 48 is hereby amended to incorporate the limitation of dependent claim 52, and claim 52 is hereby cancelled. As indicated by the Examiner, neither Nishimura et al. nor Larson et al. disclose the use of filtering to select reflected electrons caused by an incident electron beam and reject photoelectrons caused by a separate photon beam.

Ose et al. is cited for the filtering it discloses. However, the filtering in Ose relates to filtering to select reflected electrons and reject secondary electrons, both caused by a same incident electron beam. Ose et al. does not disclose the filtering out of photoelectrons caused by a separate beam, as required by claim 48 as now amended. Hence, applicants respectfully submit that claim 48, as amended, is now patentably distinguished over the combination of Nishimura et al., Larson et al., and Ose et al.

Claims 49-51 and 53-54 depend from claim 48 and so are patentable for at least the same reasons as discussed above.

In addition, claim 53 requires that “said filtering is achieved by selecting said photoelectrons based on their angular distribution from said surface of said substrate.” Per claim 53, the photoelectrons and reflected electrons leave the surface at different angles (for example, see FIG. 5 and related text in the original specification) so that the filtering may be done based on the angular distribution from the surface.

Moreover, claim 54 depends from claim 53 and adds the further limitation that “said filtering rejects most or all reflected electrons which are reflected at or near a specular angle and selects most or all reflected electrons which are scattered away from the specular angle.” In some embodiments of the invention, the incident electron beam comes at the surface at a non-perpendicular angle and causes reflected electrons at the specular angle (the angle that is equal and opposite to the incident angle) and scattered away from the specular angle. Per claim 54, only the reflected electrons scattered away from the specular angle are selected. None of the cited references discloses or suggests this additional limitation.

Claim 55 and dependent claims thereof

Claim 55 recites a patentably distinct method that is limited to imaging with both reflected electrons and emitted photoelectrons at the same time, while also maintaining surface charge. Nishimura et al. and Ose et al. disclose imaging with secondary or reflected electrons only. Larson et al. discloses imaging with photoelectrons only. None of the references discloses imaging with both reflected and emitted photoelectrons at the same time.

Claim 56 depends from claim 55 and is patentable for at least the same reasons. In addition, claim 56 requires filtering to select reflected electrons scattered away from the

specular angle and photoelectrons emitted non-perpendicularly to the surface. None of the cited references discloses or suggests this additional limitation.

Claim 61 and dependent claims thereof

Claim 61 recites a patentably distinct method that is limited to having two incident electron beams, a higher-energy beam and a lower-energy beam, filtering out reflected electrons from the lower-energy beam, and imaging using the secondary electrons generated by the higher-energy beam.

Neither Nishimura et al., nor Larson et al., nor Ose et al. appear to disclose a method using two incident electron beams. On the contrary, Nishimura et al. uses an incident charged-particle beam and UV light irradiation, Larson et al. uses of incident x-rays and low-energy electrons, and Ose et al. uses a single incident electron beam.

Claim 62 depends from claim 61 and is patentable for at least the same reasons. In addition, claim 62 requires that the filtering to select secondary electrons and reject reflected electrons is achieved based on angular distribution from the surface. In contrast, the aperture filter 62 in Ose et al. is used to select certain reflected electrons and reject other reflected electrons. In Ose et al., secondary electrons are rejected by the energy filter 60 prior to reaching the aperture filter 62.

Claim 66 and dependent claims thereof

Claim 66 recites a patentably distinct method that is limited to having two incident electron beams, a higher-energy beam and a lower-energy beam, filtering out the secondary electrons generated by the higher-energy beam, and imaging using the reflected electrons from the lower-energy beam.

Neither Nishimura et al., nor Larson et al., nor Ose et al. appear to disclose a method using two incident electron beams. On the contrary, Nishimura et al. uses an incident charged-particle beam and UV light irradiation, Larson et al. uses of incident x-rays and low-energy electrons, and Ose et al. uses a single incident electron beam.

Claims 67-68 depend from claim 66 and are patentable for at least the same reasons. In addition, claim 68 is limited to selecting reflected electrons scattered away from the

specular angle. This additional limitation is neither disclosed or suggested by any of the cited references.

Claim 69

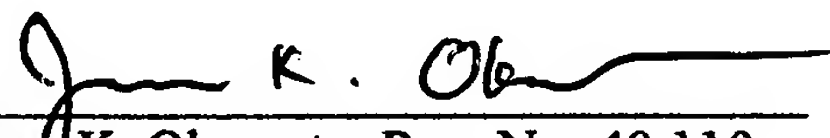
Claim 69 also recites a patentably distinct method that is limited to having two incident electron beams, a higher-energy beam and a lower-energy beam. In addition, claim 69 is further limited to filtering out the perpendicularly-emitted secondary electrons and specularly-scattered reflected electrons. This additional limitation is neither disclosed or suggested by any of the cited references.

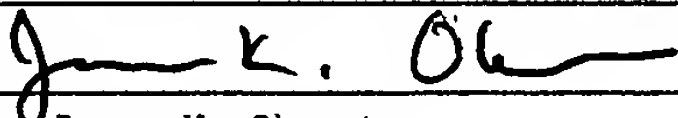
Conclusion

For the above-discussed reasons, applicants believe that remaining claims 48-51, 53-56, 61-62, and 66-69, as now amended, are patentable over the cited art. Favorable action is respectfully requested. The examiner is also invited to call the below-referenced attorney to discuss this case.

Respectfully Submitted,

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